

بسم الله الرحمن الرحيم



**International University of Africa
Deanship of Graduate Studies
Faculty of Medicine**



**ASSOCIATION BETWEEN OBESITY AND CHRONIC
KIDNEY DISEASE (CKD) IN ADULT SUDANESE
SUBJECTS IN KHARTOUM STATE, SUDAN.**

A thesis submitted in partial fulfillment for the academic
requirements for the degree of Master Degree in Biochemistry

By:

Khalid Musa Fedel EL Mula

B.Sc veterinary Science (Bahar Alghazal University, Sudan) 2001.

Supervisor:

Mohammed EL Sheikh Barri Abdelatie

Department of Biochemistry

Faculty of Medicine

International University of Africa

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قال الله تعالى :

" إِنَّ الَّذِينَ آمَنُوا وَعَمِلُوا الصَّالِحَاتِ لَهُمْ جَنَّاتٌ تَجْرِي مِنْ تَحْتِهَا الْأَنْهَارُ ذَلِكَ
الْفَوْزُ الْكَبِيرُ "

صدق الله العظيم

الايه (17) سوره البينه

Dedication

I dedicate this work with my love and respect to my father, mother, brother, sister, my wife and all those who have positive impact on my life

Khalid

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I would like to thank to my supervisor Professor Mohammed EL Sheikh Barri Abdelatie for his valuable advices, support and encouragement to work towards my goals.

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List of Acronyms and Abbreviations

| | |
|---------|---|
| WHO | World Health Organization |
| BMI | Body Mass Index |
| CKD | Chronic kidney disease |
| CCK | Chole cytokines |
| WHR | Waist- to- hip ratio |
| C T | Computed tomography |
| MRI | Magnetic resonance imaging |
| BIA | Bio impedance analysis |
| VTa | Visceral fat area |
| FDA | Food and Drug Administration |
| GFR | Glomerular filtration rate |
| EGFR | Estimates of glomerular rate |
| Cys C | Cystatin C |
| Scr | Serum creatinine |
| Scys C | Serum cystatin C |
| ORG | Obesity- related glomerulopathy |
| FSGS | Focal segmental glumerulo sclerosis |
| UAE | Urinary albumin excretion |
| FIA | Fluorescence immunoassay |
| SPSS | Statistical Package for the Social Sciences |
| LSD | Least significant different |
| ESRD | End-stage renal disease |
| CKD-EPI | Chronic kidney disease epidemiology |
| RAAS | Renin–angiotensin– aldosterone system |
| SNS | Sympathetic nervous system |

ABSTRACT

The current study was designed to investigate the correlation between obesity and chronic kidney disease (CKD). By assessment of filtration markers cystatin C and creatinine in serum as well as estimation of glomerular filtration rate (GFR). A total of one hundred sera obtained from Sudanese subjects in Khartoum state, 55 females and 45 males' were selected randomly from: The Army Club Fitness Center, Almunaser Club Fitness Center and Ahfad family health center. Sera were tested to investigate quantitatively cystatin C using ichroma™ cystatin C kits and ichroma™ apparatus and serum creatinine was measured using creatinine kits and Colorimetric – kinetic method. Cystatin C and creatinine rate were used to estimate GFR using CKD-EPI equations. This study revealed that significant difference (($P < 0.01$) in cystatin C equation appears lower glomerular filtration rate (86.83 ± 1.97) in obese than control that showed high glomerular filtration rate. This study presents obesity is associated with decreased of glomerular filtration rate and CKD.

المستخلص

هذا البحث تم اجراؤه لدراسه العلاقه مابين البدانه ومرض الكلى المزمن CKD بولايه الخرطوم وذلك بتقييم معدل الترشيح الكبيبي GFR بالكلية من خلال مرشحات السيستاتين سي cystatin C والكرياتينين creatinine الموجوده بالدم.

أشترك في هذه الدراسه 100 مشارك , 66 مصابين بالسمنه و34 أصحاء -55 أنثى و 45 ذكر تم اختيارهم عشوائياً من المراكز التالية :

مركز الرياضة العسكري – فرع الخرطوم، مركز المنتصر(ام درمان- بحري)، مركز الاحفاد لصحة الاسرة.

تم اجراء الاختبارات على السيرم لتحديد مستوى السيستاتين سي بواسطه جهاز ichromaTM cystatin وكذلك الكرياتينين عن طريق – Colorimetric kinetic method النتائج المتحصل عليها تم ادراجها في معادلات EPI - CKD لحساب معدل الترشيح الكبيبي باستخدام مستوى السيستاتين سي والاخرى باستخدام الكرياتينين والذي يعتبر اهم المؤشرات لمرض الكلى المزمن.

اتضح من هذه الدراسه ان هنالك انخفاضاً في معدل الترشيح الكبيبي (86.83 ± 1.97) بالاشخاص المصابين بالبدانه من خلال معادله السيستاتين سي.

من هذه الدراسه نخلص ان الاشخاص المصابين بالبدانه لديهم القابليه للاصابه بمرض الكلى المزمن.

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